

UNITED STATES DEPARTMENT OF THE INTERIOR

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2-21-90-F-178

October 14, 1993

Mr. William H. Karsell Division of Environmental Affairs Department of Energy Western Area Power Administration P.O. Box 3402 Golden, Colorado 80401

Re: Amendment to Biological Opinion for the Mead to Phoenix Transmission Line Project

Dear Mr. Karsell:

This amendment to our December 26, 1990, biological opinion is in response to your letter dated July 21, 1993, and received by us on July 23, 1993, requesting reinitiation of formal consultation with the Fish and Wildlife Service (Service) pursuant to section 7 of the Endangered Species Act (Act) of 1973, as amended. The Service concurs with your request for reinitiation of consultation primarily because of new information concerning the desert tortoise. This amended biological opinion is not assessing effects of an altered proposed action since none have been suggested. The action under consultation involves the construction of a 500-kilovolt (kV), alternating current (AC) transmission line and its effects on the following threatened and endangered species: the Mojave population of the desert tortoise (Gopherus agassizii), a federally listed threatened species; and the southwestern population of the bald eagle (Haliaeetus leucocephalus), American peregrine falcon (Falco peregrinus anatum), California brown pelican (Pelecanus occidentalis), Yuma clapper rail (Rallus longirostris yumanensis), razorback sucker (Xyrauchen texanus), bonytail chub (Gila elegans), Colorado squawfish (Ptychocheilus lucius), woundfin (Plagopterus argentissimus), desert pupfish (Cyprinodon macularis), Hualapai vole (Microtus mexicanus hualapaiensis), and Arizona cliffrose (Purshia subintegra), all federally listed endangered species.

This amendment to our biological opinion was prepared using the best project description and biological information available at the time of consultation, including: "Mead-Phoenix 500 kV AC Transmission Line Project, Technical Report" (U.S. Department of Energy 1983), "Mead-Phoenix Transmission Project Preliminary Draft Biological Assessment" (Dames and Moore 1990a), "Environmental Analysis of Changes to the Proposed Mead-Phoenix Transmission Project" (U.S. Department of Energy 1990), "Mead-Phoenix Transmission Project" (U.S. Department of Energy 1990), discussions with your staff, Biological Assessment" (Dames and Moore 1990b), discussions with your staff, and information contained in our files. This amendment supersedes the biological opinion dated December 26, 1990. A summary of this biological opinion is attached.

BIOLOGICAL OPINION

It is my biological opinion that the proposed construction, operation, and maintenance of the Mead-Phoenix Transmission Project is not likely to jeopardize the continued existence of the Mojave population of the desert tortoise, the southwestern population of the bald eagle, American peregrine

falcon, California brown pelican, Yuma clapper rail, razorback sucker, bonytail chub, Colorado squawfish, woundfin, desert pupfish, Hualapai vole, or Arizona cliffrose.

BACKGROUND INFORMATION

Project Description

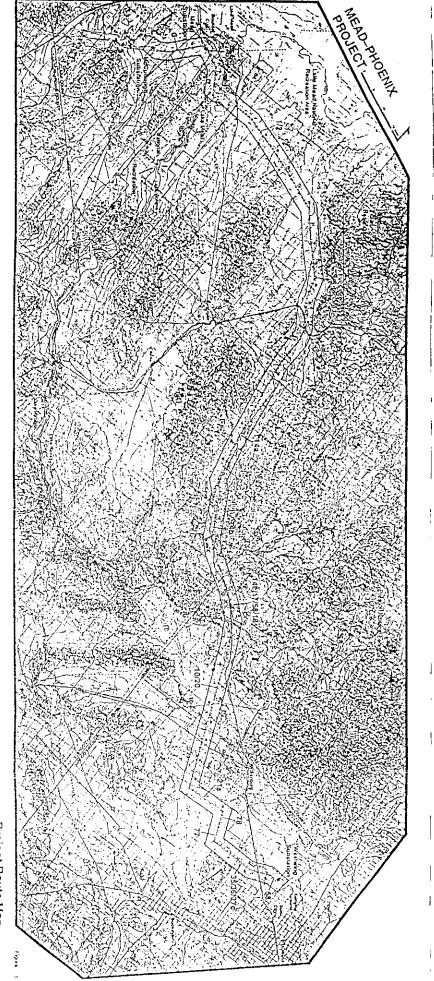
The Western Area Power Administration (WAPA), the Salt River Project (SRP), the Southern California Public Power Authority (SCPPA), and the Modesto-Santa Clara-Redding Public Power Agency (MSRPPA) propose to construct, operate, and maintain the Mead-Phoenix Transmission Line (Project) (Figure 1). The Project would serve the following purposes:

- Help reduce dependence on oil and natural gas for electricity consumed in the SCPPA and MSRPPA service areas.
- Furnish access by all project sponsors to the economy energy market.
- Provide a pathway for sale of SRP's off-peak surplus capacity to California markets.
- 4. Provide a pathway for WAPA to sell economy energy and firm transmission from the Phoenix area to Southern California.
- Help provide a link for movement of power and energy between the Pacific Northwest, the Desert Southwest, and Southern California.
- Enhance system reliability.
- Help meet the forecast need for power of SCPPA and MSRPPA members by providing firm, long-term transmission capacity.
- Provide out-of-basin support during stage III air quality events in Los Angeles.

The Project would include construction, operation, and maintenance of 260 miles of 500 Kv AC transmission line with the capability to be upgraded to 500 kV direct current (DC). This transmission line would connect the Westwing Substation, located north of Phoenix, Arizona, with the proposed McCullough II Substation, located approximately 15 miles southwest of Boulder City, Nevada (Figure 1). The project would connect with the Mead/McCullough—Victorville/Adelanto transmission line at the McCullough II Substation. The Project sponsors would apply for a right-of-way grant from the Bureau of Land Management (BLM).

The transmission line towers would be the free-standing lattice type using either a horizontal or delta tower geometry. Land areas would be required for tower construction, conductor-pulling stations, splicing sites, lay-down areas, and equipment storage areas. New access roads would not be required for the Nevada portion of the Project, although some new access road construction would be required in Arizona. New spur roads to transmission line towers would need to be graded in most locations.

Existing access routes would be used to the extent feasible. However, new access would be built where access is lacking, and existing roads would be upgraded as needed. Land area permanently committed to the proposed action would be primarily in the form of new access and spur roads to transmission line towers.



Project Route Map

The McCullough II Substation would be constructed in the immediate vicinity of the existing McCullough and El Dorado Substations. The transmission line would also be interconnected into the existing Mead Substation, located approximately three miles south of Boulder City, Nevada. A new 500 kV yard would need to be constructed at or adjacent to the existing Mead Substation.

WAPA proposes the following mitigation measures to minimize the environmental impacts of the Project on listed species (U.S. Department of Energy 1983, 1990; Dames and Moore 1990b; Western Area Power Administration 1993; John Bridges, Western Area Power Administration, Golden, Colorado, pers. comm. 1993):

- No widening or upgrading of existing access roads would be undertaken in the Project area.
- 2. All access roads not required for maintenance would be permanently closed using the most effective and least environmentally damaging methods appropriate to the area and with the concurrence of the landowner. This would limit new or improved accessibility into the area.
- 3. In designated areas, structures would be placed to avoid sensitive features and/or to allow conductors to clearly span the features, within limits of standard tower design. This would minimize the amount of sensitive features disturbed and/or reduce visual contrast.
- 4. In designated areas, construction activities would be modified during the breeding season of threatened or endangered species. This would limit disturbance to such species during critical life history periods.
- 5. Prior to construction, an ecological field review of tower and access road design would be conducted by a qualified professional to identify site-specific impacts to threatened and endangered vegetation and wildlife and to determine the most effective means to mitigate those impacts.
- Native waters would not be used for dust suppression, cement mixing, or other construction activities.
- Construction staging areas and lay-down areas would avoid sensitive species habitat and would be located in previously disturbed areas to the extent possible.
- 8. A pre-construction survey would be conducted between mileposts 7 and 11 of link 1 to determine whether active peregrine falcon nests are present. If active nests are found within one mile of the route, construction in those areas would be delayed until fledging has occurred.
- 9. To reduce the potential collision hazard to listed birds, high visibility balls would be placed on static lines from mileposts 7 to 11 of link 1.
- 10. Pre-construction surveys would be conducted from mileposts 17 through 19 of link 14b to identify any nesting bald eagles. If active nests are found within one mile of the route, construction would be delayed in those areas until fledging occurs.
- 11. Preconstruction surveys would be conducted for Arizona cliffrose from mileposts 10.0 to 22.5 of link 14b. These surveys would include all areas which may be directly or indirectly affected by any project areated activity, including downslope erosion areas of access and spur

roads. An evaluation of potential habitat would be conducted within 0.5 to 1.0 mile of the construction corridor, and surveys would be conducted within any identified appropriate habitat. These surveys would be coordinated with the BLM's Kingman Resource Area Office. The location of Project features would be adjusted as needed to avoid adverse direct or indirect impacts to any Arizona cliffrose.

The following measures are designed specifically to reduce adverse impacts to desert tortoises and their habitat. These measures are recommended for any activity in the Nevada portion of the Project (Dames and Moore 1990b, U.S. Department of Energy 1990).

- 1. The project sponsors would designate a field contact representative (FCR). The FCR would be responsible for overseeing compliance with protective stipulations for the desert tortoise and for coordination on compliance with the Service. The FCR would have the authority to halt construction activities.
- 2. Construction and maintenance workers would participate in a desert tortoise education program. The program would include a brief natural history of the desert tortoise, sensitivity of the species to disturbance, legal protection, penalties for violations of Federal and State laws, general desert tortoise activity patterns, reporting requirements, and measures employees could take to promote the conservation of the desert tortoise.
- 3. A biologist would be assigned to the pre-construction survey team stipulated in measure 13 of the Environmental Impact Statement for the project (U.S. Department of Energy 1986). The biologist would be responsible for ensuring that placement of spur roads and tower sites affect as few desert tortoise burrows as possible. These areas would be designated by flagging. The placement of spur routes would be as direct as possible to minimize habitat disturbance while minimizing destruction of desert tortoise burrows. Other work areas (e.g. splicing and tensioning areas) would also be reviewed by a biologist as construction proceeds. To the extent possible, work areas would be located in disturbed areas. Potential work areas would be flagged several days prior to construction for review by a biologist.
- 4. Overnight parking and storage of equipment and material would be in disturbed areas (i.e. lacking vegetation). These areas could be batch sites, pulling sites, and towers sites.
- 5. A desert tortoise relocation plan would be prepared for desert tortoises that may need to be excavated from burrows as a result of construction. The relocation plan would be developed in cooperation with and approved by the Service prior to construction. It is hoped that all occupied burrows can be avoided through pre-construction surveys.
- 6. The Service would be notified within three days of finding any desert tortoises killed or injured as a result of project activities. Injured animals would be transported to a veterinarian. The Service would furnish direction on the final disposition of injured desert tortoises.
- 7. Trash and food items would be removed daily by the construction workers and placed in raven-proof containers.
- Firearms and dogs would be prohibited on all construction and maintenance sites except for designated security purposes.
- Construction and maintenance vehicles would not exceed a speed of 25 miles per hour in desert tortoise habitat.

- Any category 1 or 2 desert tortoise habitat lost to construction would be compensated for in accordance with BLM requirements. 10.
- Within 90 days after completion of construction within desert tortoise habitat, a report would be submitted to the Service. The report would 11. document the effectiveness of the desert tortoise mitigation measures, the number of desert tortoises excavated from burrows (if any), and the number of desert tortoises moved from construction sites (if any). report would make recommendations for modifying or refining the stipulations to enhance benefits to the desert tortoise or to reduce needless hardship on the project proponent.

Species Descriptions:

Mojave population of the desert tortoise. The Mojave population of the desert tortoise was listed by emergency rule as endangered on August 4, 1989, and by final rule as threatened on April 2, 1990. The Mojave population includes all desert tortoises north and west of the Colorado River in California, southern Nevada, northwestern Arizona, and southwestern Utah.

The burrowing habits of desert tortoises, which vary greatly within their range (Burge 1978, Luckenbach 1982), represent unique adaptations to the extreme environs they occupy. Burrows function primarily as thermoregulatory aids and may also aid in water conservation and protection from predators. Sheltersites are typically located under shrubs, in wash banks, in rock outcrops, or in caliche caves.

Peak desert tortoise activity usually coincides with the abbreviated period of annual bloom in the spring. Average home ranges can vary from 27 to 131 acres, but individuals occasionally move great distances, including one desert tortoise that moved 4.5 miles over a 15-month period (Berry 1986). Further information on the range, biology, and ecology of the desert tortoise can be found in Burge (1978), Burge and Bradley (1976), Hovik and Hardenbrook (1989), Luckenbach (1982), Turner et al. (1984), Weinstein et al. (1987), Woodbury and Hardy (1948), and Fish and Wildlife Service (1993).

The Service recently issued a draft recovery plan for the Mojave population of the desert tortoise (Fish and Wildlife Service 1993). This draft plan proposes the establishment of 14 Desert Wildlife Management Areas (DWMAs) in ·six recovery units. Management in DWMAs would target the reduction or elimination of those factors which have caused declines in desert tortoise populations. The boundaries of proposed DWMAs are not precisely defined in the draft plan but would be established by land management agencies in coordination with the Service, State wildlife agencies, and others. A portion of the Project in Nevada lies within the proposed Piute-Eldorado DWMA.

On August 30, 1993, a rule proposing designation of critical habitat for the Mojave population of the desert tortoise was published in the Federal Register (58 FR 45748-45768). Approximately 6.2 miles of the proposed transmission line, from highway 95 to just south of the Mead Substation, would be constructed just west of the proposed Piute-Eldorado critical habitat unit. Construction of the Project would not effect, directly or indirectly, any lands proposed as critical habitat.

Data on desert tortoise distribution and abundance were obtained from the BLM's Las Vegas District Office and field surveys. The BLM data were derived from a map dated August 8, 1989, showing the interim desert tortoise habitat areas for Nevada. The BLM also provided 1:250,000 scale maps showing the location and results of previous surveys for desert tortoises in the Project area.

Four and one-half miles of the proposed transmission line corridor immediately southeast of the Mead Substation were surveyed on May 24 and 25, 1990. Surveys consisted of six adjacent 30-foot wide belt transects, or a 100 percent coverage of areas which would be affected by the Project (Figure 2). The transects were centered on the proposed transmission centerline. All desert tortoise sign was recorded and mapped. Sign includes live desert tortoises, burrows, pallets, scats, egg shell fragments, body parts, tracks tortoises, burrows, pallets, scats, egg shell fragments, body parts, tracks etc. These surveys were consistent with Service protocol (Service 1992), except that no zone of influence transects were conducted. No surveys were conducted along the proposed route from 4.5 miles southeast of the Mead Substation to the Colorado River.

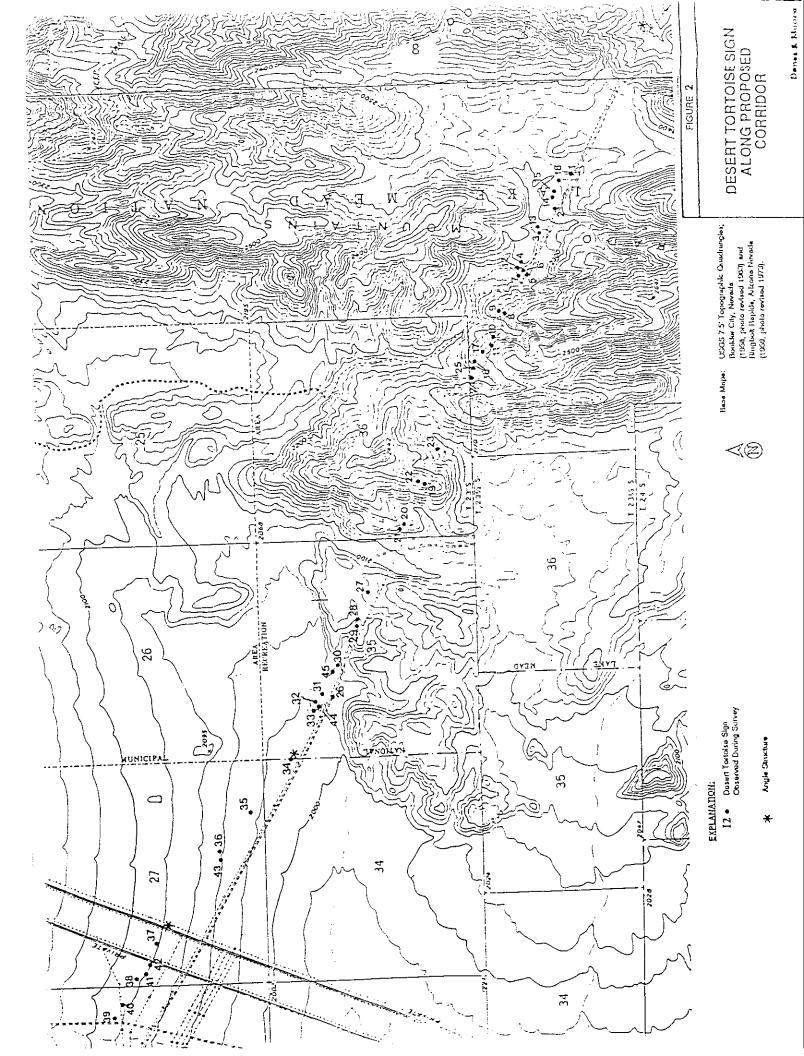
Surveys for the Mead to McCullough portion of the proposed route did not follow Service protocol. Instead, biologists walked four 30-foot wide, 1.5 mile triangular transects (Berry and Nicholson 1984). These transects were conducted on May 25 and 26, 1990. In addition, 11 triangular transects were walked by the BLM within this portion of the Project.

The first 4.5 miles of proposed corridor east of the Mead Substation was found to be occupied by a relatively low density tortoise population. Forty-five corrected sign were located over 190 acres for an average of 0.41 corrected sign per acre. This converts to an estimated 10 to 45 desert tortoises per square mile based on the use of a regression equation developed by Berry and Nicholson (1984) and modified by density estimates developed by the BLM's Las Vegas District. These estimates of desert tortoise abundance are consistent with surveys conducted in the area by the BLM and Dames & Moore (Clark County Regional Flood Control and U.S. Bureau of Land Management 1990).

Surveys by Dames and Moore ended at 4.5 miles southeast of the Mead Substation. However, recent surveys along a proposed Highway 93 route that approximates the Project route showed that desert tortoises occur at least 6.5 miles southeast of the Mead Substation in the Eldorado Mountains (Rorabaugh miles southeast of the Mead Substation in the Eldorado Mountains (Rorabaugh 1991). Desert tortoise burrows were also located at Willow Beach on the Colorado River (Longshore 1990). Based on these surveys, desert tortoise habitat probably occurs on the Project route throughout the Eldorado Mountains east to the steep terrain of the Colorado River gorge. Thus, desert tortoises probably occur along most (estimated 9 miles) of the Project route from the Mead Substation to the Colorado River gorge.

During surveys between the Mead and McCullough substations, no desert tortoises or their sign were observed (Dames and Moore 1990b). However, these surveys did not conform to Service protocol, and because they were triangular transects, they did not follow the Project route precisely. Since 1987, the BLM has conducted 11 transects just upslope and east of the Project. No sign was located on 9 transects, and 1 to 3 corrected sign were located on the remaining 2 transects indicating a low density population adjacent to the proposed route. Desert tortoise sign was also found approximately 0.5 miles east of the Mead Substation in September, 1991 (Rorabaugh 1991). A live desert tortoise was found 1.5 miles east of the Mead Substation during the same survey. A live desert tortoise was also recorded near the corridor, northeast of Highway 165 (Mark Maley, Fish and Wildlife Service, Reno, Nevada, pers. comm. 1993). In addition, a burrow was located approximately 1.5 miles north of the McCullough Substation (U.S. Department of Energy 1990). Taken together, these data show that desert tortoise habitat probably improves just upslope and east of the Project. Soils are less sandy and drainages are more abundant in these upslope areas, which creats better conditions for burrow construction. However, because desert tortoises occur just upslope of the Project, they likely also occur in low densities and perhaps patchily between the Mead and McCullough substations.

The distribution of other listed wildlife and plant species within the corridor was determined through a review of the existing literature.



Literature-based information was updated by contacts with the Service, the BLM, the Arizona Game and Fish Department (AGFD), and the Nevada Department of Wildlife (NDOW) in March, 1989, (U.S. Department of Energy 1989, 1990).

Bald eagle. Bald eagles are large raptors with a white head and tail in the adult; immatures are dark or mottled. Bald eagles winter along rivers and major reservoirs in the southwestern United States and other areas where prey species such as fish, waterfowl, rabbits, and carrion are available (U.S. Fish and Wildlife Service 1987). Nest sites are usually located in large trees or cliffs near water, where fish are abundant. In the project area, wintering bald eagles occur on the Big Sandy River near Wickieup, on Burro Creek, and along the Colorado River. In 1975 and 1976, a pair of bald eagles attempted to nest near Topock, Arizona (Monson and Phillips 1981). Another pair of bald eagles nested from 1988 to 1992 on Burro Creek approximately 20 miles upstream of milepost 18 of link 14b of the Project (Tim Tibbetts, U.S. Fish and Wildlife Service, U.S. Fish and Wildlife Service, Phoenix, Arizona, pers. comm. 1993).

Factors contributing to the bald eagle's decline include degradation and loss of riparian habitat, pesticide-induced reproductive failure, ingestion of lead-poisoned waterfowl, illegal hunting, and human disturbance (U.S. Fish and Wildlife Service 1987, Arizona Game and Fish Department 1988).

Peregrine falcon. The peregrine falcon is a reclusive, crow-size falcon; slaty blue-gray above, whitish below. The head is black with a vertical pattern over the eyes. The peregrine falcon inhabits areas characterized by steep, rocky cliffs preferably near water where prey are abundant. In Arizona, this bird is most often found in the transition zone from 6,500 to 8,500 feet elevation, but may occur from 3,500 to 9,000 feet (U.S. Fish and Wildlife Service 1987). It winters occasionally along the lower Colorado River and in central Arizona (Monson and Phillips 1981). Peregrine falcons nested recently along the Colorado River near milepost 10 of Colorado River link of the Project area. They also nest at the Grand Wash Cliffs and in the Cerbat Mountains in Arizona (Dames and Moore 1990b).

The primary reason for the peregrine falcon's decline is reproductive failure due to pesticide contamination (U.S. Fish and Wildlife Service 1987). Nationwide population declines in the 1950's and 1960's appear to have been reversed in recent years (Arizona Game and Fish Department 1988).

California Brown pelican. The California brown pelican is a large, dark gray-brown seabird with a pouch underneath a long bill and with webbed feet. Adults have a white head and neck, brownish black breast and belly, and silver grayish on most of the upper parts. Although primarily an inhabitant of coastal areas where it nests on islands, the brown pelican occurs in Arizona as a transient along the lower Colorado River and is occasionally found in central Arizona where it is blown inland by storms. The decline in numbers of brown pelicans is primarily a result of pesticide-induced reproductive failure (U.S. Fish and Wildlife Service 1987).

Yuma clapper rail. The Yuma clapper rail is a small, hen-sized water bird with long legs and a long, slender, decurved bill. It is tawny-gray in color with barred feathers and a short tail. The Yuma clapper rail occurs in Arizona along the Colorado River primarily in cattail (Typha domingensis) and bulrush (Scirpus sp.) marshes, and occasionally occurs in the Salt River marshes near Phoenix and at Picacho Reservoir. It presently breeds as far north as Topock Marsh on the Havasu National Wildlife Refuge (U.S. Fish and Wildlife Service 1987). Most if not all Yuma clapper rails are non-migratory (Eddleman 1989). The primary reasons for the decline of the Yuma clapper rail are floods and destruction of habitat (U.S. Fish and Wildlife Service 1987).

Razorback sucker. The final rule to list the razorback sucker was published on October 23, 1991. The razorback sucker once occurred in all major rivers and larger streams of the Colorado River drainage. Natural populations have been reduced to a non-recruiting population in Lake Mohave and a few remnant populations in Lake Mead, Lake Havasu, the Central Arizona Project, and the lower Colorado River. Although massive reintroductions have been made in the Gila, Verde, and Salt rivers, long-term success of these efforts is uncertain (Arizona Game and Fish Department 1988). The razorback sucker is threatened by habitat alteration and predation by non-native fishes (Arizona Game and Fish Department 1988).

Bonytail chub. The bonytail chub is a large (up to 24 inches) minnow characterized by a small head, large fins, humped back, and extremely thin caudal peduncle. The bonytail chub was once found throughout the mainstream Colorado River but is now close to extinction. Although a few old specimens (40+ years) have been taken in recent years, there is no known recruitment in the wild. This fish inhabits warm, swift, turbid rivers and is usually found in eddies and pools (U.S. Fish and Wildlife Service 1987). The only extant natural population occurs in Lake Mohave (Arizona Game and Fish Department 1988).

Colorado Squawfish. The Colorado squawfish is the largest American minnow (up to 6 feet long). It is dusky-greenish, with a slender body and gold flecks on the dorsal surface. The head is long and slender and the mouth is large. The Colorado squawfish was once present throughout the Colorado River and its tributaries in Arizona but has been extirpated from the lower river basin. It is endemic to the Colorado River and inhabits warm, swift, turbid waters. Adults are found in pools and eddies, and young in backwater areas. Alteration of river systems due to dam construction, introduction of exotic fish species, and over harvesting are the reasons suggested for the decline of the Colorado squawfish (U.S. Fish and Wildlife Service 1987, Arizona Game and Fish Department 1988).

<u>Woundfin</u>. The woundfin is a small (4 inches), silver minnow with fairly large fins and a sharp dorsal fin spine. Historically, the woundfin was found in the lower Colorado Basin, below the Grand Canyon, the lower Gila River drainage, and the lower Colorado River in Arizona. This fish is currently present in the Virgin River between La Verkin Springs, Utah and Lake Mead, Nevada (U.S. Fish and Wildlife Service 1987).

Desert pupfish. The desert pupfish is a small fish (2 inches long) with a smoothly rounded body shape and with narrow, vertical, dark bars on the sides. Three natural populations of this fish remain in the United states: two in the tributaries of the Salton Sea in California and the other at Quitobaquito springs in Pima County, Arizona. The desert pupfish was once common in desert springs, marshes, and tributaries of the lower Gila and Colorado River drainages in Arizona, California, and Mexico and also in some slower reaches of the Colorado, Gila, San Pedro, and Santa Cruz rivers (U.S. Fish and Wildlife Service 1987).

<u>Hualapai vole</u>. The Hualapai vole is a small rodent known only from ponderosa pine stands at 5,800 to 9,050 feet elevation in the Hualapai Mountains, Mohave County, Arizona. Its preferred habitat has been seriously damaged by livestock grazing. There is a possibility this species occurs in the Music Mountains, as well (U.S. Fish and Wildlife Service 1987).

Arizona cliffrose. This member of the rose family is an evergreen shrub that reaches seven feet in height. The bark is pale gray and shreddy. Leaves and new shoots are covered with soft, white hairs. Leaves are simple or 3-lobed and have entire (smooth) margins. Flowers have 5 white or yellow petals about 0.4 inch long. The Arizona cliffrose is presently known from below the Mogollon Rim in Mohave, Graham, Yavapai, and Maricopa counties, Arizona. It

is found on gravelly clay loam soils over limestone on low rolling hills between 2,050 and 3,660 feet elevation (U.S. Fish and Wildlife Service 1987).

The Arizona cliffrose is threatened by habitat destruction due to overgrazing; road construction, widening, and maintenance; mining; and off-road vehicle damage (U.S. Fish and Wildlife Service 1987). It is known to occur within 1.5 miles of the project area in the vicinity of Burro Creek. There is no known habitat on the Project route, however, site-specific surveys of proposed construction areas have not been conducted.

EFFECTS OF THE ACTION

Direct impacts to listed species from construction activities would consist of electrocution and/or in-flight collision with transmission lines, and temporary and/or permanent disturbance, displacement, and/or loss of individuals or their habitat. Permanent disturbance would result from construction of tower bases (1,225 ft² each), access roads where needed, and spur roads. Temporary disturbance would result from use of parking areas, crane pad locations, conductor pulling stations, splicing sites, lay down areas, equipment storage areas, and parking areas. Activities associated with project construction and maintenance could have deleterious effects on some sensitive species. Heavy construction equipment and other motorized vehicles probably represent the most significant potential threat to sensitive plant and animal species. Sensitive fish populations could be affected if vehicle fuels or lubricants are allowed to enter streams supporting populations of such species.

Acreage disturbed for both access roads and spur roads combined are calculated as follows. Construction of new access roads would, at a maximum, result in permanent loss of about 2.0 acres per mile of transmission line. However, existing access roads would be used in many portions of the Project route. Existing roads requiring upgrading would result in the permanent loss of 1.5 acres per mile. Construction of spur roads would result in the loss of 0.5 acres per mile (U.S. Department of Energy 1986). The land area temporarily disturbed by construction activities is estimated to be 4.78 acres per mile (U.S. Department of Energy 1986).

Bald eagle and peregrine falcon. Electrocution and/or in-flight collision with transmission lines are the primary potential adverse effects of construction and operation of the proposed Project on the American peregrine falcon and bald eagle. Of particular importance are the Colorado River crossing from mileposts 7 to 11 of link 1 near where peregrine falcons have nested, and from mileposts 17 to 19 of link 14b downstream of bald eagle nesting areas on Burro Creek. Electrocutions are related to distribution, size, behavior, and other biological aspects of raptors (Olendorff et al. 1981), and occur when raptors use powerlines and support structures for perching and nesting. Electrocution occurs when raptors simultaneously contact two conductors or a conductor and a grounded portion of the line (Olendorff et al. 1981). Because of their greater wingspan, larger birds are more likely to be electrocuted. The wingspan of the peregrine falcon is typically 3.25 to 3.75 feet while that of a hald eagle is 6 to 7 feet. Olendorff et al. (1981) reported that eagles constitute 70 to 90 percent of all raptor mortalities on electric distribution lines. They also reported that most golden eagle mortalities along power lines (up to 98 percent of identifiable carcasses) are immature or subadult birds, which are generally less adept at maneuvering than adults.

The visibility of overhead wires is a major factor in the extent to which birds are affected (U.S. Department of Energy 1983). Most collisions occur at night during periods of foul weather and/or at dusk or dawn (Thompson 1978). Extra high voltage (EHV) transmission lines may be less of a problem than smaller distribution lines or telephone/telegraph lines because of their

greater size and, therefore, greater visibility (Thompson 1978; Scott et al. 1972). Thompson (1978) recommended clustering lines at river crossings to increase their overall visibility. Willard et al. (1977) noted that most migrants travel about 300 yards above the ground, while Gauthreaux (1969 and 1978) found that most migration occurred at about 500 feet above the ground. Gauthreaux also noted that there appears to be quite a lot of migratory activity within 328 feet of the ground.

Raptors that actively pursue prey in flight, such as peregrine falcons, are probably more vulnerable to colliding with transmission lines than those that do not, but the size of the bird, wingspan, and maneuverability are also important factors (Anderson et al. 1978). Nonresident birds are more susceptible to collisions than locals, which are more likely to know the location of flight hazards in their area (Anderson et al. 1978).

All transmission line towers and line conformations would be constructed to minimize bird collisions and electrocutions according to criteria set forth by the Raptor Research Foundation (John Bridges, pers. comm. 1990). High visibility balls would be placed on static lines from milepost 7 to 11 of the link 1 to minimize collisions (U.S. Department of Energy 1990).

Project construction activities could disturb peregrine falcons resulting in nest failure or abandonment of established nests. A pre-construction survey would be conducted between mileposts 7 and 11 of link 1 to determine whether active nests are present along the Project route (U.S. Department of Energy 1990). If active nests are found within one mile of the Project route, construction in these areas would be delayed until fledging has occurred. Pre-construction surveys would also be conducted for nesting bald eagles within one mile of the route from mileposts 17 to 19 of link 14b. If active nests are found, construction would also be delayed in this area until fledging occurs (U.S. Department of Energy 1990).

Yuma clapper rail. The Yuma clapper rail is not known to occur north of Topock Marsh on the Havasu National Wildlife Refuge, which is approximately 100 miles south of the project area. Furthermore, the Project would avoid impacts to Colorado River wetlands by spanning the Colorado River (Dames and Moore 1990). Therefore, the proposed action is expected to have no effect on this species or its habitat.

Bonytail chub, woundfin, Colorado squawfish, and desert pupfish. Impacts to bonytail chub, woundfin, Colorado squawfish, and desert pupfish may result from pollutants released into the river or from habitat disturbance during construction. The bonytail chub is known to occur only in Lake Mohave, which is located approximately 20 miles downstream of the proposed Project. The woundfin is currently known to occur only between La Verkin Springs, Utah and Lake Mead, Nevada. The Colorado squawfish new occurs only in the upper basin of the Colorado River. The three remaining populations of desert pupfish occur in tributaries of the Salton Sea and at Quitobaquito Springs in Pima County, Arizona. Thus, the transmission line would not traverse any habitats currently occupied by these species. None of the four species should therefore be affected by the proposed action.

<u>Razorback sucker</u>. The razorback sucker may occur in the project area, but construction of the transmission line and placement of the supporting structures would be conducted in such a way as to avoid impacts to potential habitat in the Colorado River and associated backwaters (Dames and Moore 1990). Thus, the Project should have no effect on the razorback sucker.

<u>Hualapai vole</u>. The Hualapai vole is known only from the Hualapai Mountains and potentially from the Music Mountains in Mohave County, Arizona. These areas lie outside of the proposed transmission line corridor, therefore, the proposed action would not affect the vole or its habitat.

Arizona cliffrose. Arizona cliffrose is known to occur within 1.5 miles of the project area in the vicinity of Burro Creek. No Arizona cliffrose were found in the project area during sensitive plant surveys conducted in April and May, 1993 (EcoPlan 1993), however, potential cliffrose habitat occurs between mileposts 10.0 and 22.5 of link 14b. Individuals or portions of populations could be crushed by vehicles during construction. Preconstruction surveys for Arizona cliffrose would be conducted between mileposts 10.0 and 22.5 of link 14b. Direct and indirect impacts to all Arizona cliffrose located within the Project area would be avoided.

Mojave population of the desert tortoise. Adverse effects of construction, operation, and maintenance of the proposed transmission line to desert tortoises may result from vehicle strikes with project-related vehicles and through inadvertent entrapment in sheltersites collapsed by construction activities. Individual animals also may be subject to harassment from increased levels of human activity and from ground vibrations caused by use of heavy equipment. Harassment also may occur during implementation of certain mitigation measures, such as excavation of sheltersites and capture and removal of individual animals from the construction right-of-way. In addition, desert tortoises could be collected as pets by pipeline construction and maintenance crews; however, the employee education program should minimize this possibility.

Desert tortoises may be indirectly affected by the proposed project through loss or degradation of their habitats. Such loss or degradation would result from grading, soil compaction, and crushing of vegetation during construction and use of spur roads, crane pad locations, and tower sites. Inadvertent or intentional destruction of dens and burrows could result in a net reduction of sheltersites and escape cover. Some animals may escape direct injury by moving to adjacent areas. Such individuals could be vulnerable to increased predation, exposure, or stress through disorientation and loss of shelter.

At a minimum, desert tortoises occur within the 9 miles of the Project corridor from the Mead Substation to within 1 mile of the Colorado River. Although no desert tortoises or desert tortoise sign were observed in the 13.5 miles of the corridor between the Mead and McCullough Substations, desert tortoises have been found nearby and probably also occur on the Project route. However, desert tortoises probably occur only in low densities and possibly patchily between the Mead and McCullough substations. Assuming 4.78 acres of temporary disturbance per mile of transmission line due tower site disturbance, spur road construction, and crane pad locations (Dames and Moore 1990), then adverse effects from these activities would occur on an estimated 43.0 acres of desert tortoise habitat between the Mead Substation and the Colorado River. Additional habitat loss would occur between the Mead and McCullough Substations. These activities would not cause permanent loss of habitat (Dames and Moore 1990). However, the Service considers these effects to be a long-term impact because arid ecosystems require long periods of time to restore naturally (Vasek et al. 1975a and b).

Dames and Moore (1990) estimated another 2.3 acres of desert tortoise habitat in the first 4.5 miles east of the Mead Substation would be permanently lost as a result of tower and spur road construction. Assuming similar loss per mile in habitat east of this, a total of 4.6 acres of desert tortoise habitat would be permanently lost between the Mead Substation and the Colorado River.

Construction activities could facilitate use of the area by common ravens (Corvus corax). Ravens are efficient predators of desert tortoises, especially juveniles (Campbell 1983, Miller 1932), and are attracted to trash generated by human activity. Trash removal programs proposed as part of the project should minimize use of the area by common ravens.

Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities that are reasonably certain to occur during the course of the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in section 7 of the Act and, therefore, are not considered cumulative to the proposed action.

The Mead-Phoenix Transmission Line would connect with the Mead/McCullough-Victorville/Adelanto Transmission Project in California. These projects would supply power from Arizona, Nevada, New Mexico, and west Texas to coastal cities in southern California. The effects to listed species resulting from Mead/McCullough-Victorville/Adelanto Project were addressed in a previous biological opinion (1-6-90-F-46) dated February 22, 1990, and issued by the Service's Ventura Field Office, California.

The majority of the land along the right-of-way is Federal land managed by the BLM. Any future activities on these lands would be subject to section 7 consultation. Certain actions on public lands such as unauthorized livestock grazing, off-road vehicle use, and dumping are difficult to control and may contribute to continued habitat loss and degradation. On-going actions on private lands, such as mining, oil and gas leases, sand and gravel operations, grazing, off-road vehicle use, and urbanization may also contribute to continued habitat loss and degradation. Extensive development on private lands is occurring west of Phoenix where the Westwing Substation is located. Actions on private lands which have no Federal nexus but may result in a take of a listed species would be addressed through the section $\hat{10}(a)(1)(B)$ permit process.

The Service does not believe the impacts described above, considered together with other non-Federal actions, would appreciably reduce the likelihood of survival and recovery of these species for the following reasons:

- The project would not disturb a significant amount of desert tortoise habitat, and no proposed critical habitat would be affected. Additionally, impacts to desert tortoise habitat would be compensated through acquisition of additional habitat as facilitated by the project proponent's contribution to the Desert Tortoise Habitat Conservation Fund.
- The project sponsors would implement measures to reduce the incidence of in-flight collisions and electrocutions of birds with the transmission line.
- 3. Prior to construction, an ecological field review of tower and access road design would be conducted by a qualified biologist to identify and minimize site-specific impacts to threatened and endangered species.

INCIDENTAL TAKE

Section 9 of the Act prohibits the take of listed species without special exemption. Taking is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Under the terms of sections 7(b)(4) and 7(0)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited under the Act provided that such taking is in compliance with this incidental take statement. Reasonable and prudent measures, as well as terms and conditions in this biological opinion are nondiscretionary, and must be undertaken by the agency or made a binding condition of any grant or permit, as appropriate.

This biological opinion anticipates the following forms of take:

- Two (2) desert tortoises in the form of direct mortality or injury due to crushing by vehicles or equipment during construction, operation, and maintenance of the transmission line.
- Ten (10) desert tortoises in the form of harassment associated with excavation of occupied burrows and movement of desert tortoises out of 2. harm's way.
- An unknown number of desert tortoise eggs destroyed or relocated out of harm's way during construction of the transmission line. 3.
- An unknown number of desert tortoises in the form of indirect mortality through predation by common ravens drawn to trash generated during construction, operation, and maintenance activities.
- An unknown number of desert tortoises in the form of harm through increased noise associated with operation of heavy equipment.
- An unknown number of desert tortoises in the form of injury or mortality resulting from destruction of desert tortoise habitat.
- One (1) bald eagle per seven years in the form of direct mortality or injury due to electrocution or collision with Project transmission 7 .
- One (1) peregrine falcon per seven years in the form of direct mortality or injury due to electrocution or collision with Project transmission 8. lines.

Reasonable and Prudent Measures

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize the incidental take authorized by this biological opinion:

- Measures shall be taken to minimize mortality and injury of desert tortoises due to construction, operation, and maintenance activities. 1.
- Measures shall be taken to minimize predation of desert tortoises by common ravens drawn to construction areas. 2.
- Measures shall be taken to minimize destruction of desert tortoise habitat such as soil compaction, erosion, or crushed vegetation, due to 3. construction or maintenance activities.
- Measures shall be taken to minimize electrocution and collision injury or mortality of bald eagles and peregrine falcons.
- Measures shall be taken to ensure compliance with the reasonable and prudent measures, terms and conditions, reporting requirements, and reinitiation requirements contained in this biological opinion. 5.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the project sponsors must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. Terms and conditions 1.a., f., g., and h.; 2; 3; 4.a. and b.; and 5.a., b. and c. are adapted from the proponent's project proposal (U.S. Department of Energy 1990), but contain slight modifications or added detail.

- To implement Reasonable and Prudent Measure number 1, the following terms and conditions shall be implemented:
 - a. The transmission line corridor shall be clearly marked or flagged at its outer limits prior to the onset of any surface-disturbing activity. All personnel shall be informed that their activities must be confined to within the marked or flagged areas. All must be confined to within the marked to the boundaries of the habitat disturbance shall be restricted to the boundaries of the transmission-line corridor. All equipment and materials shall be stored within the boundaries of these areas or within previously disturbed areas. Construction staging areas and lay-down areas shall avoid sensitive species habitat and shall be located in previously disturbed areas to the extent possible. The placement of spur routes shall be as direct as possible to minimize habitat disturbance while minimizing destruction of desert tortoise burrows.

From the Mead Substation to withir one mile of the Colorado River, the transmission line corridor shall be surveyed by qualified desert tortoise biologists (biologists familiar with desert tortoise sign and experienced in desert tortoise surveys) no more than 15 days prior to initiation of construction. Surveys shall provide 100-percent coverage of the entire construction area. All desert tortoise burrows located shall be conspicuously flagged or marked. All desert tortoise burrows, and other species' burrows which may be used by desert tortoises, shall be examined with a fiber-optic scope, if necessary, to determine occupancy of each burrow by desert tortoises.

- b. Qualified desert tortoise biologists shall be present during all construction and pre-construction activities in Nevada that could result in a take of desert tortoise. Every group of heavy equipment shall be accompanied by a qualified desert tortoise equipment shall be accompanied by a qualified desert tortoise any action that might result in harm to a desert tortoise; and be any action that might result in harm to a desert tortoise; and be responsible for assisting crews in compliance with protection measures, performing surveys in front of the crew as needed to locate and avoid desert tortoises, and monitoring compliance.
- c. Alternatively to term and condition 1.a. and 1.b., a temporary desert tortoise barrier may be installed along both sides of the transmission line corridor prior to onset of any construction activities. Qualified desert tortoise biologists shall be onsite during installation of the desert tortoise barrier to minimize during installation of the desert tortoise barrier, qualified desert tortoise biologists shall tortoise barrier, qualified desert tortoise biologists shall thoroughly search all areas inside the barrier according to term and condition 1.a. Any desert tortoises or eggs found inside the barrier shall be relocated to a safe location outside the barrier by an authorized desert tortoise biologist in accordance with the attachment and terms and conditions 1.d. and e.
- d. If, in the Nevada portion of the Project, desert tortoise(s) or their eggs are found above ground or within burrows in areas to be disturbed by construction activities, it is not possible to avoid such disturbance, and the desert tortoise(s) or eggs could be such disturbance, and the desert tortoise(s) or eggs could be injured or killed by such activities, they shall be relocated by injured or killed by such activities, they shall be relocated by an authorized biologist (see term and condition 1.e. for an authorized biologist (see term and condition 1.e. for definition) a short distance away from the construction zone to definition) a short distance away from the construction or habitat which will not be disturbed by further construction or operation activities. Burrows from which desert tortoises are operation activities. Burrows from which desert tortoises are

construction shall be collapsed to prevent entry by desert tortoises. Handling procedures shall adhere to the attached protocol.

Desert tortoises removed from construction areas shall be placed in the shade of a shrub, in a natural unoccupied burrow, or in an artificial burrow following the attached protocol. Desert tortoises shall not be placed on lands outside the administration of the Federal government without the written permission of the landowner. Desert tortoises shall be purposefully moved only by an authorized desert tortoise biologist solely for the purpose of moving them out of harm's way.

If a suitable location is not found, desert tortoises shall be provided to a Service-approved transfer facility. The transfer facility must be provided with a 10-day notice that desert tortoises may be delivered. The project proponent shall bear all costs associated with delivery of desert tortoises to the transfer facility. Each desert tortoise shall be delivered in an individual cardboard box which is marked with the date and location of collection, biological opinion number, and "WAPA" to distinguish these desert tortoises from those collected on private lands.

- e. Only biologists authorized by the Service shall handle desert tortoises in Nevada. The project proponent shall submit the name(s) of the proposed authorized biologist(s) to the Service for review and approval at least 15 days prior to the onset of activities. No construction activities shall begin until an authorized biologist is approved.
- f. Widening or upgrading of access roads shall be kept to the minimum necessary to allow safe passage of construction-related vehicles.
- g. All access roads not required for maintenance shall be permanently closed using the most effective and least environmentally damaging methods appropriate to the area and with the concurrence of the landowner.
- Construction and maintenance vehicles shall not exceed a speed of
 25 miles per hour in desert tortoise habitat.
- 2. To implement Reasonable and Prudent Measure number 2, the following term and condition shall be implemented:

The project sponsors or their designee shall implement a trashabatement program during construction of the transmission line that shall include the use of covered, raven-proof trash receptacles; removal of trash from the construction site to the trash receptacles following the close of each work day; and proper disposal of trash in a sanitary landfill at the end of each work week.

3. To implement Reasonable and Prudent Measure number 3, the following term and condition shall be implemented:

Prior to issuance by the BLM of a right-of-way permit for the transmission line, the project proponents shall transfer funds in an amount to be calculated by BLM into an account administered by Clark County, as offsite mitigation for the destruction of desert tortoise habitat within the project boundaries. The mitigation rate is based on \$324 per acre of desert tortoise habitat affected

by long-term disturbance, but shall be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index beginning January 1, 1994. These funds shall be directly deposited into Desert Tortoise Habitat Conservation Fund Number 236-8290 administered by Clark County for the purpose of securing desert tortoise management areas, habitat enhancement, and desert tortoise research. None of these funds shall be used to develop a habitat conservation plan. These funds are independent of any other fees collected by the County for desert tortoise conservation planning. These funds shall be held in an interest-bearing account, and the accrued interest also shall be expended on desert tortoise conservation measures. All section 7 funds shall be expended only with the concurrence of the Service.

Total payment must be made prior to issuance of a right-of-way for project proponents to be in compliance with the provisions of the Act. Payment, if made directly, shall be by certified check or money order payable to Clark County, and delivered to:

Clark County Administrative Services 225 Bridger Avenue, 6th Floor Las Vegas, Nevada 89155 (702) 455-3530

The payment, whether made directly or transferred under an interlocal agreement, shall be accompanied by a cover letter from the project proponent that identifies the project and biological opinion that is requiring the payment, the amount of payment enclosed, and the number of the check or money order. The cover letter shall also identify the name and address of the project proponent, the name and address of the Federal agency responsible for authorizing the project, and the address of the Service office issuing the biological opinion. This information shall be used to notify the project proponent, the authorizing Federal agency, and the Service that the payment has been received.

- 4. To implement Reasonable and Prudent Measure number 4, the following terms and conditions shall be implemented:
 - a. The project sponsors shall designate a field contact representative (FCR). The FCR shall be responsible for overseeing compliance with protective stipulations for the desert tortoise and for coordination on compliance with the Service. The FCR shall have the authority to halt construction activities in violation of these terms and conditions. The designated representative shall provide coordination among the WAPA, BLM, and the Service.
 - b. Prior to start of preconstruction and construction activities in Nevada, all employees who work in such areas shall be informed, through an educational program, of the occurrence of the desert tortoise in the project area and of the threatened status of the species. The program shall also be presented to all supervisory personnel and personnel associated with operations and maintenance activities in desert tortoise habitat. All such personnel shall be advised of the definition of "take", the potential for impacts to the desert tortoise, and the potential penalties (up to \$25,000 in fines and 6 months in prison) for taking a threatened species. They shall also be informed of the terms and conditions included in this biological opinion. All such persons shall sign a statement indicating that they have completed the educational

program and understand fully its provisions and the terms and conditions included in this biological opinion.

- 5. To implement Reasonable and Prudent Measure number 5, the following terms and conditions shall be implemented:
 - a. A pre-construction survey shall be conducted from mileposts 7 through 11 of link 1 to determine whether active peregrine falcon nests are present. If active nests are found within one mile of the route, construction in those areas shall be delayed until fledging has occurred.
 - b. A pre-construction survey shall be conducted from mileposts 17 through 19 of link 14b to identify any nesting bald eagles. If active nests are found within one mile of the route, construction shall be delayed in those areas until fledging occurs.
 - c. To reduce the potential collision hazard to listed birds, bird flight diverters, specular wire, or other high-visibility transmission wire shall be placed on static lines from mileposts 7 to 11 of link 1 and mileposts 10.0 to 22.5 of link 14b.

Reporting Requirements

Upon locating dead, injured, or sick animals that are listed as threatened or endangered, initial notification must be made to the Services' Division of Law Enforcement. In Arizona, notification must be made to Special Agent Melvin Holt, Federal Building, Room 8, 26 North McDonald, Mesa, Arizona, (Telephone: 602/261-6443). In Nevada, initial notification must be made to Special Agent Edward Dominguez, Las Vegas, Nevada (Telephone: 702/388-6380). Instructions for proper handling and disposition of such specimens shall be issued by the Division of Law Enforcement. Care must be taken in handling sick or injured animals to ensure proper treatment and care, and in handling dead specimens to preserve biological material in the best possible state. All desert tortoise remains shall be frozen immediately and provided to one of the following institutions holding appropriate Federal and State permits per their instructions:

Museum of Vertebrate Zoology, University of California, Berkeley, California Los Angeles County Museum of Natural History, Los angeles, California San Bernardino County Museum, San Bernardino, California University of Nevada, Department of Biology, Las Veças, Nevada University of New Mexico, Albuquerque, New Mexico

Arrangements shall be made with the institution by the WAPA through a biologist prior to construction regarding proper disposition of potential museum specimens. Should none of the above institutions want the desert tortoise specimens, the remains may be disposed of in any appropriate manner. In conjunction with the care of sick or injured desert tortoises, or the preservation of biological materials from a dead desert tortoise, the WAPA has the responsibility to ensure that photographs and information relative to the date, time, and location of the desert tortoise when found, and possible cause of injury or death of each desert tortoise be recorded and provided to the Service. Should injured animals be treated by a veterinarian and survive, the Service should be contacted regarding final disposition of these desert tortoises.

The WAPA shall notify the Service of all desert tortoises killed, injured, or removed from within the right-of-way within three days of the completion of the construction. The project proponents shall, within 30 days after completion of construction, submit a report to the Service summarizing all desert tortoise-related activities undertaken due to Project construction,

including desert tortoise biologist activities, number of desert tortoises killed or injured, and the actual acreage of desert tortoise habitat, including proposed critical habitat, temporarily or permanently affected.

If, during the course of the action, the amount or extent of the incidental take limit is reached, the WAPA must immediately reinitiate consultation with the Service to avoid violation of section 9 of the Act. Operations must be stopped in the interim period between the initiation and completion of the new consultation if the Service determines that the impact of additional taking will cause an irreversible and adverse impact on the species, as required by CFR 402.14(i). The project proponents should provide an explanation of the causes of the taking.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by implementing conservation programs for the benefit of endangered and threatened species. Conservation recommendations have been defined as Service recommendations for discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, or to obtain information needed to promote the recovery of a listed species. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibility for these species.

- 1. The project proponents should implement studies in Nevada to determine the extent to which common ravens use transmission lines for nesting and perching and the degree to which transmission lines have increased the common raven population in Nevada.
- 2. The project proponents should use native seed mixes when revegetating areas disturbed by construction activities.
- 3. The project proponents should implement all of the above the terms and conditions targeting desert tortoises in the Arizona portion of the Project, as well as in Nevada.

In order for the Service to be kept informed of actions that either minimize or avoid adverse effects, or that benefit listed species or their habitat, the Service requests notification of the implementation of any conservation recommendations.

CONCLUSION

This concludes formal consultation for the Mead-Phoenix Transmission Line Project. As required by 50 CFR 402.16, reinitiation of formal consultation shall occur if: 1) the amount or extent of incidental take is reached, 2) new information reveals effects of the agency action that may impact listed species or critical habitat in a manner or to an extent not considered in this biological opinion, 3) the agency action is subsequently modified in a manner that causes an effect to a listed species or critical habitat that was not considered in this biological opinion, and 4) a new species is listed or critical habitat designated that may be affected by the action.

The Service appreciates the assistance and cooperation of your staff throughout this consultation process. If we may be of further assistance, please contact Jim Rorabaugh or Tom Gatz at (602) 379-4720.

Sincerely,

Sam F. Spiller State Supervisor

Sour Fuller

Enclosure

State Supervisor, Fish and Wildlife Service, Reno, Nevada State Supervisor, Fish and Wildlife Service, Salt Lake City, Utah Field Supervisor, Fish and Wildlife Service, Ventura, California Field Supervisor, Fish and Wildlife Service, Carlsbad, California cc: State Director, Bureau of Land Management, Phoenix, Arizona Director, Arizona Game and Fish Department, Phoenix, Arizona Regional Director, Fish and Wildlife Service, Albuquerque, Regional Director, Fish and Wildlife Service, Portland Oregon George Ruffner, EcoPlan Associates, Inc., Mesa, Arizona

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SUMMARY

BIOLOGICAL OPINION FOR THE MEAD TO PHOENIX TRANSMISSION LINE PROJECT

Date of Opinion: October 14, 1993

Action Agency: Western Area Power Administration, Golden, Colorado

Project: Construction of a new 500 kV AC transmission line from the McCullough Substation south of Boulder City, Nevada, to the Westwing Substation near Phoenix, Arizona, a distance of 260 miles. Land disturbance would result from construction of a new McCullough II Substation, transmission towers, conductor pulling stations, splicing sites, lay-down areas, equipment storage areas, access roads, and spur roads.

Listed Species Affected: Mojave population of the desert tortoise (Gopherus agassizii), a federally listed threatened species; and the southwestern population of the bald eagle (Haliaeetus leucocephalus), American peregrine falcon (Falco peregrinus anatum), California brown pelican (Pelecanus occidentalis), Yuma clapper rail (Rallus longirostris yumanensis), razorback sucker (Xyrauchen texanus), bonytail chub (Gila elegans), Colorado squawfish (Ptychocheilus lucius), woundfin (Plagopterus argentissimus), desert pupfish (Cyprinodon macularis), Hualapai vole (Microtus mexicanus hualapaiensis), and Arizona cliffrose (Purshia subintegra), all federally listed endangered species.

Biological Opinion: Non-jeopardy

Incidental Take Statement:

Level of take anticipated: Anticipated take includes no more than two desert tortoises injured or killed as a result of crushing by vehicles or equipment; no more than ten desert tortoises as a result of excavation of occupied burrows and moving of animals out of harm's way; an unknown number of desert tortoise eggs due to relocation out of harm's way or destruction by project activities; an unknown number of desert tortoises due to predation by common ravens drawn to the project area, an unknown number of desert tortoises harmed by increased noise associated with construction, and no more than one bald eagle and one peregrine falcon every seven years due to electrocution or collision with transmission lines.

Reasonable and Prudent Measures: The biological opinion presents five measures for reducing incidental. Implementation of these measures through the terms and conditions are mandatory.

Terms and Conditions: Mandatory terms and conditions include a variety of measures to be implemented in the Nevada portion of the route to reduce incidental take of desert tortoises, including minimization of disturbance to desert tortoise habitat, avoidance of taking individual animals, education of project employees to be aware of the desert tortoise and the terms and conditions of the biological opinion, onsite biological monitors, a preconstruction survey, trash abatement, and payment of a compensation fee. Terms and conditions to reduce take of bald eagles and peregrine falcons include avoiding construction in sensitive areas if nesting bald eagles or peregrine falcons occur within one mile of the transmission corridor, and use of high visibility lines to reduce collisions.

Conservation Recommendations: The project proponents should study the extent to which common ravens use transmission lines for nesting and perching in Nevada, use native seed mixes in revegetation, and implement terms and conditions targeting reduction of take of desert tortoises in Arizona, as well as in Nevada.

ATTACHMENT

DESERT TORTOISE HANDLING AND OVERWINTERING PROCEDURES

(Note: Much of the information contained herein was obtained from Chapter III, Protocols for Handling Live Tortoises, in the Interim Techniques Handbook for Collecting and Analyzing Data on Desert Tortoise Populations and Habitats. This handbook is a cooperative effort among federal and state Habitats. Primary editor is Dr. Cecil Schwalbe of the University of Arizona, agencies. Primary editor is Dr. Cecil Schwalbe of the University of Arizona, Tucson, Arizona. The information on handling tortoise eggs was developed by the Reno Field Station in consultation with Dr. Schwalbe, Betty Burge of Las Vegas, Nevada, and the Service's Ventura Field Office.)

1. All desert tortoises shall be handled in a careful manner. This includes lifting the animal slowly, fully supporting the animal in an upright position, and completing various measurements in the minimum amount of time. A tortoise can be damaged or die of intestinal amount of time. A tortoise must be turned over on its back, this should be torsion. If a tortoise must be turned over on its back, this should be done gently. The fieldworker shall turn the tortoise over by carefully rolling it over on its side to its back, and return the tortoise to the upright position by rolling it back in the same direction. The tortoise shall not be rolled end over end, side over side, or spun.

Tortoises, especially females, may be fatally damaged by blows, butting, or overturning, which results in egg yolk peritonitis brought on by seepage of egg yolk or breakage of shelled eggs into the peritoneal cavity. Handling of potentially gravid females shall be done very carefully.

To prevent hyperthermia, on warm days a tortoise must be kept in the shade (of the fieldworker, a pack, other equipment, etc.) except during photography. Tortoises shall not be weighed, measured, etc. when air temperatures exceed 90°F (32°C) at 1.5 m (4.9 ft) above ground unless measures are taken to insure the animal does not overheat. Tortoises shall be placed in shaded areas during handling, and if the animal is to be held for a longer period, it shall be individually placed in a sterile cardboard box, placed in a shaded, cool location and returned to the site of capture or relocation at sunrise on the following day. CAUTION! TEMPERATURES ARE MUCH HIGHER NEARER THE GROUND. Take extreme caution to avoid overheating a tortoise whenever surface temperatures exceed 86°F (30°C). Shield the bulb of the thermometer from direct solar radiation and wind when measuring temperatures.

2. Because of the threat of Upper Respiratory Tract Disease (URTD), all tortoises shall be handled so as to minimize the chances of spreading the disease, even if URTD has not been documented in a given locality. All personnel handling tortoises must be initially trained using protocols developed by Dr. Cecil Schwalbe of the University of Arizona. These protocols will be used to minimize the spread of URTD. All personnel handling tortoises shall wear disposable latex or plastic personnel handling tortoises shall wear disposable latex. Not more gloves to prevent transmission of diseases among tortoises. Not more than one tortoise shall be handled with each pair of gloves.

All equipment that comes in contact with any tortoise shall be sterilized before it is used on another tortoise. For example, triangular files for notching, calipers for measuring shell length, rules, and other equipment should be sterilized by soaking in 95 percent isopropyl or ethyl alcohol for at least 20 minutes before using on another tortoise. A 25 percent solution of chlorine bleach may also be used, but bleach is extremely corrosive and may damage many types of equipment. Wooden rules should not be used; they are difficult to sterilize because of the porosity of the wood. Use metal or plastic rules instead.

To avoid sterilizing spring scales or weighing straps prior to weighing each tortoise, use individual "T-shirt" bags, the plastic bags with two handles that are used to bag groceries. The handles of the bay can be used to suspend the tortoise during weighing.

The fieldworker's clothes shall be changed completely, including shoes, before visiting other tortoise sites. Dr. Schwalbe defines a site as follows: "As a general rule, a single valley or desert mountain range would be considered one site, unless there were special circumstances, such as URTD confirmed in one part of a valley, but not thought to occur in other parts of that valley. In such an instance, a change of clothes would be necessary before visiting other parts of that valley." Always visit the site with known occurrence of URTD last to minimize the chance of spreading the disease. Vehicle undercarriages and tires shall be washed when travelling between sites where URTD is known or suspected to occur. The fieldworker is not required to wash vehicles if there are no confirmed reports of URTD on a study site. The fieldworker shall consider that wet soil carrying microbes will adhere to vehicles, and such microbes are less likely to die before a new study area is visited. It is advisable to wash a vehicle after driving in wet soil if feasible.

When transported by vehicle or confined, each tortoise shall be contained in a newly-purchased, clean cardboard box of an appropriate size. Boxes shall be discarded after use. Tortoises shall never be placed in automobile trunks or on floorboards in an unconfined manner. Tortoises shall never be placed in the bed of a truck over the catalytic converter as this area of the metal bed may become extremely hot. Tortoises must not be left unattended in vehicles; this measure is intended to eliminate accidental mortality caused by overheating. Truck beds and floorboards must be padded and travel shall be at speeds which eliminate unnecessary vibrations.

3. Tortoises removed from the project area and released into the wild as a result of mitigation measures for this project shall not be individually marked, except for those hibernating tortoises removed temporarily as specified under Procedure number 6 below. These tortoises shall be marked per Bureau of Land Management (BLM) standards (Attachment A-1). Tagging is the current preferred method for long-term marking and is supplemented with photographs and drawings. All three methods should be used to insure that over time the tortoise can be properly identified in future years.

Tagging: Tagging was originally used in 1977 and appears to be as effective or better than notching for a long-term marking technique. place a small dot of white paint or a small piece of heavy white paper (card stock) on the fourth left costal scute; wait for the paint to dry. Write the identifying number for that tortoise on the dry dot or paper using permanent black ink. Wait for the ink to dry and cover the dot or paper and the ink with quick-drying clear epoxy. Note that the epoxy shall not touch the suture lines between the scutes. Numbers shall not be placed in the middle of the scute as this area may be sloughed or rubbed depending on the age of the tortoise and habitat in which it occurs.

In addition, a photograph (35mm slide) of the carapace and fourth left costal scute shall be taken. If possible dust off the tortoise with a small brush to remove mud or dust from the scutes. Remember the brush must be either sterilized or disposed of after each use. Place a small piece of white paper (16 mm x 90 mm) on the edge of the shell with information on the study site name, date, and tortoise number. The tortoise shell area and fourth costal scute shall fill the slide frame. Drawings shall be made showing any anomalies (e.g., extra or missing

marginal, costal, or vertebral scutes) or injuries (e.g., punctures holes from canines, tooth scrapes).

The responsible Federal Agency shall develop its own cataloging format to enable it and others to track tortoises handled as a result of development projects.

- A standard data sheet should be developed to record the following 4. information:
 - Name of person collecting the animal.
 - Exact location and date of collection. Α.
 - The individual number assigned to that animal. c.
 - The over-wintering location of the tortoise. D.
 - The release site and date of release of the animal. Ξ.
 - Health condition of the tortoise, including measured weight and length at initial capture and release. In addition to F. this information complete the URTD checklist (Attachments A-2 & A-3).
 - Photographs of carapace, plastron, and fourth left costal G. scute.
 - The information specified in 4.A. through 4.G. must be supplied to the responsible Federal agency and the Fish and ri . Wildlife Service (Service) immediately after cessation of both tortoise clearing and release activities. The information shall be provided in the form of a report accompanied by data sheets.
- Tortoises found actively moving on the surface, and to be removed from the project site, shall be released between 150 and 1000 feet from the 5. outer boundary of the project area nearest the capture point. Relocated tortoises shall be placed under a shrub in the shade. Tortoises shall be monitored at the release site until they are exhibiting normal behavior. Should the capture occur late in the day so the animal will not have sufficient time to find a suitable burrow for the night, the tortoise shall be placed in a clean cardboard box as described above and held in an appropriate place safe from predators and danger of hyperthermia, until release can occur in the morning.
- If tortoises found in burrows, and to be removed from the project site and released into the wild, are removed from burrows between November 1 6 and March 15, they shall be transported in cardboard boxes to the approved over-wintering site. Each tortoise shall be placed in an artificial burrow within a fenced enclosure with one tortoise per enclosure. Each enclosure must be separate from adjacent pens so that one tortoise can not place its head or limbs through the fence and physically contact a tortoise in an adjacent enclosure. Fencing does not need to be buried but shall be stable enough to preclude escape.

The main chamber of the burrow shall be constructed of plywood and the roof placed approximately 2.5 feet below the soil surface. The burrow's tunnel shall be 8 to 10 feet long with a gentle slope (e.g., about 4:1). The tunnel shall be stabilized on the top with PVC pipe cut in half. The pipe shall be no smaller than 15 inch in diameter and soil shall be used to adjust tunnel to tortoise size. After placement of the tortoise in the burrow, the entrance of the tunnel shall be partially blocked with loose topsoil.

If any tortoise excavated is underweight, as determined by comparison to regressions developed by Dr. Michael Weinstein for the tortoises at the Honda project, the tortoise shall be placed in a room at a temperature of 90° to 100°F and allowed to soak in fresh water for two to three hours. After rehydration and drying, the tortoise shall be cooled to hibernation temperature slowly and placed in an artificial

burrow. This procedure shall be implemented only by persons instructed in this manner of treatment.

Beginning in February, activity of the tortoises within the artificial burrows shall be monitored to determine an appropriate release time. Tortoises shall be released in the morning hours when temperatures are conducive to activity. The appropriate time for release will probably occur in the third week of March.

Each tortoise shall be released between 150 and 1000 feet from the outer boundary of the project area nearest the capture point. Released tortoises shall be placed under a shrub in the shade. Releases shall occur at a temperature that is suitable for activity, with reasonable expectation that the temperature will remain within the tortoise's thermal preference long enough for the tortoise to adjust to its surroundings. Tortoises shall be monitored at the release site until they are exhibiting normal behavior. To facilitate this measure, each tortoise must be accompanied by one of the approved biologists. There shall be no mass releases of animals.

7. Tortoise eggs shall be moved to artificial nests either in the wild or at an approved facility. Biologists must receive special training in the procedures outlined below, but such training can be obtained after a nest is actually found. If this is done, the nest shall be carefully covered with soil so as not to move the eggs and protected until on site training is provided. The responsible Federal agency shall ensure that this training is made available.

Any nest that is found shall be carefully excavated by hand at a time of day when the air temperature 6 inches above the ground is approximately equal to the soil temperature at egg level. Immediately upon finding a nest, large tool use shall be discontinued and the nest excavated by the biologist using his or her hands. Before disturbance of nest contents, each egg shall be gently marked with a small dot on the top using a felt-tipped pen to establish the egg's orientation in the nest. In handling nest contents, eggs must be maintained in this orientation at all times. Because egg shells become extremely fragile in the last few weeks before hatching, special care shall be taken with eggs found from August to mid-October. Because these eggs are very fragile, some may break during handling. This will be lethal to egg contents. Such an accident can be expected to occur until techniques are developed to avoid this type of incident. Broken eggs shall be buried nearby and left in the field, or the contents preserved and provided to qualified researchers.

The biologist shall measure and record the depth of the nest below the soil surface, the location of the nest in relation to any adjacent shrub (i.e., whether on the north, south, east, or west side of the shrub), the species of shrub and its approximate foliage volume, and the soil type. Place approximately one inch of soil from the nest area in a bucket and carefully transfer the eggs to the bucket, maintaining egg orientation. Cover the eggs with soil that is free of cobbles and pebbles, to a depth equivalent to that in the original nest.

If good tortoise habitat is available in the general area, the eggs shall be relocated between 150 to 1,000 feet from outer boundary of the project site. Prepare a nest with the same depth, orientation, location in relation to a specific shrub species, and in the same soil type as the original nest. Carefully transfer the eggs, maintaining their original orientation, to the new nest. The eggs shall be replaced so that they touch one another. Gently cover with soil from which cobbles and pebbles have been removed so that all the air spaces around the eggs are filled. Relocated nests in the wild shall be

monitored by a qualified biologist. The monitoring program shall be developed in consultation with the Service.

If a suitable site for a new nest is not available in the wild, the eggs shall be prepared for incubation in a suitable holding facility. Place a small amount of soil in a bucket and transfer the eggs to the bucket using the technique specified above, making sure the eggs are touching one another. Carefully fill the bucket to the depth of the original nest, but leave the top of the soil layer 3 inches below the rim of the bucket so that future hatchlings cannot escape. Bury the bucket in soil in a safe location at an approved holding facility.

The biologist shall record in detail all the procedures used in moving eggs. Personnel caring for incubating eggs at a facility shall maintain a record of where the eggs were found, method of incubation, length of time and conditions under which the eggs were incubated, observations of eggs during the incubation period, information about hatchling health and behavior, and disposition of the hatchlings.

- 8. Should any deviation from the procedures outlined above be necessary, the approved biologist shall contact the Fish and Wildlife Service as soon as possible.
- 9. A final report, containing all the information noted above and including release information, must be supplied to the Service and the responsible Federal agency within one month of the final releases or disposition of tortoises.